PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
(Case No. 00-713-i17)

In the Application of:	
Chad A. Mirkin, et al.	Examiner: Jezia Riley
Serial No.: 09/976,968	Group Art Unit: 1656
Filed: October 12, 2001	Confirmation No. 2915
For: NANOPARTICLES HAVING OLIGONUCLEOTIDES ATTACHED THERETO AND USES THEREFOR	

Commissioner for Patents and Trademarks
Washington, D.C. 20231

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Sir:

In order to comply with discretionary regulations 37 CFR §§1.97 and 1.98, attached hereto is Form PTO-1449, copies[1] of the documents listed thereon. These documents contain information which the Examiner may consider to be important in deciding whether to allow the present application to issue as a patent.

1. Stimpson, et al., U.S. Patent No. 5,599,668 issued 02/04/97.

2. Weiss, et al., U.S. Patent No. 5,990,479 issued 11/23/99.

[1]To the extent that a document is listed and no copy of same is attached, then such document is not at the present time available to the undersigned or is available in the file of a parent application. If a listed document is not in the English language and an English translation is readily available, such translation is also attached; if translation is not attached it is not readily available to the undersigned. If a foreign language patent document is cited, and an English language equivalent is known to the undersigned, then such equivalent patent is also cited on the attached form along with the corresponding foreign language patent and a connecting arrow indicated therebetween; if no such English language equivalent is cited, then none is known to undersigned.

3. Stimpson, et al., "Real-time detection of DNA hybridization and melting on oligonucleotide arrays by using optical wave guides," *Proc. Natl. Acad. Sci..*, Vol. 92, pp. 6379-6383, California Institute of Technology (1995) U.S.

4. Storhoff, et al., "Strategies for Organizing Nanoparticles into Aggregate Structures and Functional Materials," *Journal of Cluster Science*, Vol. 8, No. 2, pp. 179-217, Plenum Publishing Corporation (1997) U.S.

5. Storhoff, et al., "One-Pot Colorimetric Differentiation of Polynucleotides with Single Base Imperfections Using Gold Nanoparticle Probes," *J. Am. Chem. Soc.*, Vol. 20, pp. 1959-1964, American Chemical Society (1998) U.S.

6. Velev, et al., "In Situ Assembly of Colloidal Particles into Miniaturized Biosensors," *Langmuir*, Vol. 15, No. 11, pp. 3693-3698, American Chemical Society (1999) U.S.

7. Zhu, et al., "The First Raman Spectrum of an Organic Monolayer on a High-Temperature Superconductor: Direct Spectroscopic Evidence for a Chemical Interaction between an Amine and $Yba_2Cu_3O_{7-\delta}$," *J. Am. Chem. Soc.*, Vol. 119, pp. 235-236, American Chemical Society (1997) U.S.

8. Yguerabide, et al., "Light-Scattering Submicroscopic Particles as Highly Fluorescent Analogs and Their Use as Tracer Labels in Clinical and Biological Applications," I. Theory, *Analytical Biochemistry*, Vol. 262, pp. 137-156 (1998) U.S.

9. Yguerabide, et al., "Light-Scattering Submicroscopic Particles as Highly Fluorescent Analogs and Their Use as Tracer Labels in Clinical and Biological Applications," II. Experimental Characterization, *Analytical Biochemistry*, Vol. 262, pp. 157-176 (1998) U.S.

In accordance with MPEP Sections 609 and 707.05(b), it is requested that each document cited (including any cited in applicant's specification which is not repeated on the attached Form PTO-1449) be given thorough consideration and that it be cited of record in the prosecution history of the present application by initialing on Form PTO-1449. Such initialing is requested even if the Examiner does not consider a cited document to be sufficiently pertinent to use in a rejection, or otherwise does not consider it to be prior art for any reason, or even if the Examiner does not

believe that the guidelines for citation have been fully complied with. This is requested so that each document becomes listed on the face of the patent issuing on the present application.

The present Disclosure Statement is being submitted in compliance with 37 CFR 1.56 insofar as an Examiner might consider any of the cited documents important in deciding whether to allow the application to issue as a patent, but the citation of each document is not to be construed as an admission that such document is necessarily relevant or prior art. No representation is intended that the cited documents represent the results of a complete search, and it is anticipated that the Examiner, in the normal course of examination, will make an independent search and will determine the best prior art consistent with 37 CFR 1.104(a) and 1.106(b) and, in the course of each search, will review for relevance every document cited on the attached form even if not initialed.

Early and favorable consideration is earnestly solicited.

Respectfully submitted,

Dated: 1/29/02

Emily Miao
Registration No. 35,285

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Facsimile: (312) 913-0002

FORM PTO-1449
Rev. 2-32)

U.S. Department of Commerce
Patent and Trademark Office

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use several sheets if necessary)

Atty. Docket No.	Serial No.
00-713-CIP	09/976,968
Applicant: Chad A. Mirkin, et al.	
Filing Date: October 12, 2001	**Group:** 1656

U.S. PATENT DOCUMENTS

Examiner Initial		Document Number	Date	Name	Class	Subclass	Filing Date if Appropriate
	1.	5,599,668	02/04/97	Stimpson, et al.			
	2.	5,990,479	11/23/99	Weiss, et al.			

FOREIGN PATENT DOCUMENTS

		Document Number	Date	Country	Class	Subclass	Translation Yes	Translation No

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc).

	3.	Stimpson, et al., "Real-time detection of DNA hybridization and melting on oligonucleotide arrays by using optical wave guides," *Proc. Natl. Acad. Sci.*, Vol. 92, pp. 6379-6383, California Institute of Technology (1995) U.S.
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EXAMINER	DATE CONSIDERED

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Rev. 2-32)

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Filing Date: October 12, 2001	**Group:** 1656

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Hon. Commissioner of Patents and Trademarks   S/N – 09/976,968   Atty EM

Re: Applicant - Chad A. Mirkin, et al.   Case No. 00-713-i17

NANOPARTICLES HAVING OLIGONUCLEOTIDES ATTACHED THERETO AND USES THEREFOR

Via Hand Delivery to Examiner Jezia Riley, Group Art Unit 1656

Sir:
Please place the Patent Office receipt stamp hereon and mail to acknowledge receipt of:

- ☒ Information Disclosure Statement with 16 references
- ☒ Supplement Information Disclosure Statement with copies of 9 references
- ☒ Second Supplemental Information Disclosure Statement with copies of 3 references
- ☒ Third Supplemental Information Disclosure Statement with copies of 5 references
- ☒ Fourth Supplemental Information Disclosure Statement with copies of 60 references
- ☒ Fifth Supplemental Information Disclosure Statement with copies of 4 references

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Respectfully,
McDonnell Boehnen Hulbert & Berghoff
Attorney for Applicant

VIA HAND DELIVERY TO EXAMINER JEZIA RILEY

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
(Case No. 00-713-i17)

In re Application of:	
Chad A. Mirkin, et al.	
Serial No.: 09/976,968	Examiner: Jezia Riley
Filed: October 12, 2001	Group Art Unit: 1637
For: NANOPARTICLES HAVING OLIGONUCLEOTIDES ATTACHED THERETO AND USES THEREFOR	Confirmation No. 2915

Assistant Commissioner for Patents
Washington, D.C. 20231

SIXTH SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Sir:

In order to comply with discretionary regulations 37 CFR §§1.97 and 1.98, attached hereto is Form PTO-1449, copies[1] of the documents listed thereon: These documents contain information which the Examiner may consider to be important in deciding whether to allow the present application to issue as a patent.

1. Merrill, et al., U.S. Patent No. 5,830,986, issued November 3, 1998.

2. Lough, et al., U.S. Patent No. 5,900,481, issued May 4, 1999.

[1]To the extent that a document is listed and no copy of same is attached, then such document is not at the present time available to the undersigned or is available in the file of a parent application. If a listed document is not in the English language and an English translation is readily available, such translation is also attached; if translation is not attached it is not readily available to the undersigned. If a foreign language patent document is cited, and an English language equivalent is known to the undersigned, then such equivalent patent is also cited on the attached form along with the corresponding foreign language patent and a connecting arrow indicated therebetween; if no such English language equivalent is cited, then none is known to undersigned.

3. Goldberg, et al., U.S. Patent No. 6,203,989, issued March 20, 2001

4. Bawendi, et al., U.S. Patent No. 6,251,303, issued June 26, 2001.

5. Abbott, et al., U.S. Patent No. 6,277,489, issued August 21, 2001.

6. Bawendi, et al., U.S. Patent No. 6,306,610, issued October 23, 3001

7. Mirkin, et al, U.S. Patent No. 6,361944, issued March 26, 2002.

8. Wagner, et al., U.S. Patent No. 6,365,418, issued April 02, 2002

9. Mirkin, et al., U.S. Patent No. 6,417,340, issued July 09, 2002

10. WO 93/25709 published 23 December 1993.

11. WO 98/04740 published 5 January 1998

12. WO 98/17317 published 30 April 1998

13. WO 99/60169 published 25 November 1999

14. WO 00/33079 published 8 June 2002

15. WO 01/00876 published 4 January 2001

16. WO 01/51665 published 19 July 2001

17. WO 01/73123 published 4 October 2001

18. WO 01/86301 published 15 November 2001

19. WO 02/04681 published 17 January 2002

20. WO 02/18643 published 7 March 2002

21. WO 02/36169 published 10 May 2002

22. WO 02/46483 published 13 June 2002

23. WO 02/46472 published 13 June 2002

24. Letsinger, R., et al., "Chemistry of Oligonucleotide-Gold Nanoparticle Conjugates," *Phosphorus, Sulfur and Silicon*, Volume 144, p. 359-362 (1999)

25. Letsinger, R., et al., "Use of a Steroid Cyclic Disulfide Anchor in Constructing Gold Nanoparticle—Oligonucleotide Conjugates," *Bioconjugate Chem*, p. 289-291 (2000)

26. Li Z., et al., "Multiple thiol-anchor capped DNA-gold nanoparticle conjugates," *Nucleic Acids Research*, Volume 30, p. 1558-1562 (2002)

27. Nuzzo R., et al., "Spontaneously Organized Molecular Assemblies. 3. Preparation and Properties of Solution Adsorbed Monolayers of Organic Disulfides on Gold Surfaces, " *J. Am Chem. Soc.*, Volume 109, p. 2358-2368 (1987)

28. Otsuka, H, et al., "Quantitative and Reversible Lectin-Induced Association of Gold Nonoparticles Modified with α-Lactosyl-ω-mercapto-poly(ethyleneglycol)," *J. Am Chem. Soc.*, Volume 123, p. 8226-8230 (2001).

29. Wuelfing, P, et al, "Nanometer Gold Clusters Protected by Surface-Bound Monolaters of Thiolated Poly(ethylene glycol) Polymer Electrolyte," *J. Am. Chem. Soc.*, Volume 120, p. 12696-12697 (1998)

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that the cited documents represent the results of a complete search, and it is anticipated that the Examiner, in the normal course of examination, will make an independent search and will determine the best prior art consistent with 37 CFR 1.104(a) and 1.106(b) and, in the course of each search, will review for relevance every document cited on the attached form even if not initialed.

Early and favorable consideration is earnestly solicited.

Dated: 9/6/02

Respectfully submitted,

Emily Miao
Registration No. 35,285

McDonnell Boehnen Hulbert & Berghoff
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FORM PTO-1449
(Rev. 2-32)

U.S. Department of Commerce
Patent and Trademark Office

Atty. Docket No.	Serial No.
00-713[illegible]17	09/9[illegible]6,968

COPY

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use several sheets if necessary)

Applicant:	
Chad A. Mirkin, et al.	
Filing Date:	**Group:**
October 12, 2001	1637

U.S. PATENT DOCUMENTS

Examiner Initial		Document Number	Date	Name	Class	Subclass	Filing Date if Appropriate
	1.	5,830,986	11/03/98	Merrill, et al.	528	332	10/28/96
	2.	5,900,481	05/04/99	Lough, et al.	536	55.3	11/06/96
	3.	6,203,989	03/20/01	Goldberg, et al	435	6	03/25/99
	4.	6,251,303	06/26/01	Bawendi, et al.	252	301.4R	09/18/98
	5.	6,277,489	08/21/01	Abbott, et al.	428	403	12/04/98
	6.	6,306,610	10/23/01	Bawendi, et al.	435	7.1	09/17/99
	7.	6,361,944	03/26/02	Mirkin, et al.	435	6	06/25/99
	8.	6,365,418	04/02/02	Wagner, et al.	436	518	05/18/00
	9.	6,417,340	07/09/02	Mirkin, et al.	536	23.1	10/20/00

FOREIGN PATENT DOCUMENTS

		Document Number	Date	Country	Class	Subclass	Translation Yes	Translation No
	10.	WO 93/25709	23 December 1993	PCT				
	11.	WO 98/04740	5 February 1998	PCT				
	12.	WO 98/17317	30 April 1998	PCT				
	13.	WO 99/60169	25 November 1999	PCT				
	14.	WO 00/33079	8 June 2002	PCT				
	15.	WO 01/00876	4 January 2001	PCT				

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	18.	WO 01/86301	15 November 2001	PCT				
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	22.	WO 02/46483	13 June 2002	PCT				
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	28.	Otsuka, H., et al., "Quantitative and Reversible Lectin-Induced Association of Gold Nonoparticles Modified with □-Lactosyl-□-mercapto-poly(ethyleneglycol)," *J. Am Chem. Soc.*, Volume 123, p. 8226-8230 (2001)
	29.	Wuelfing, P., et al., "Nanometer Gold Clusters Protected by Surface-Bound Monolayers of Thiolated Poly(ethylene glycol) Polymer Electrolyte," *J. Am Chem. Soc.*, Volume 120, p. 12696-12697 (1998)

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Hon. Commissioner of Patents and Trademarks

S/N—09/976,968

Atty EM

Case No. 00-713-i17

Re: Applicant - Mirkin, et al.

Nanoparticles Having Oligonucleotides Attached Thereto and Uses Therefor
VIA HAND DELIVERY TO EXAMINER JEZIA RILEY, GROUP ART UNIT 1637

Sir:

Please place the Patent Office receipt stamp hereon and mail to acknowledge receipt of:

- ☒ Transmittal Letter
- ☒ Sixth Supplemental Information Disclosure Statement
- ☒ U.S. PTO 1449 Form with copies of 29 references

Binders IX-XI

Fee Enclosed
$ 0.00

Respectfully,
McDonnell Boehnen Hulbert & Berghoff
Attorney for Applicant